

Rivers and Streams

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Fish Species of Greatest Conservation Need in Iowa's Non-Wadeable Rivers: Distribution, Relative Abundance, and Relations with In-stream Habitat and Potential Movement Barriers

North American freshwater fish assemblages are considered to have the most diverse taxa of temperate freshwater fishes in the world. Rivers and stream in particular, support the majority of this biodiversity. Unfortunately, most large rivers are highly fragmented by dams, and are notably prone to habitat degradation and upstream pollution. These harsh environmental conditions can negatively affect fish assemblages and potentially limit fish distributions. Fragmentation, habitat degradation, and pollution are evident throughout Iowa's interior non-wadeable rivers, and are assumed to negatively affect the native fishes of these systems. Since the distribution of many of these non-wadeable river fishes are largely unknown, the effects of these stressors are poorly understood. The Iowa Wildlife Action Plan has identified 68 fishes as species of greatest conservation need (SGCN), which represents the highest proportion of any sensitive species listed in Iowa. The majority of these fish SGCN (i.e., 35 species) are typically common in large non-wadeable rivers, so it is incredibly important to understand the stressors and critical habitats of these fishes in order to allocate the right amount conservation. Previous work from Travis Neebling provided non-wadeable river protocols for fish sampling, in which he was able to sample 23 fish SGCN. Using this protocol to sample fish and habitat will provide the state with better information about the ecology of fish SGCN in non-wadeable rivers. The objectives of this project are to (1) evaluate spatial patterns in fish assemblage structure in Iowa's non-wadeable rivers and (2) determine the effects of dams and habitat characteristics on fish assemblage structure in Iowa's non-wadeable rivers.

In the 2010 field season, 16,630 fish were sampled from 13 reaches of the Cedar River. The catch was composed of 70 species and one hybrid. Eighteen of the 70 species sampled were SGCN which included the western sand darter. The western sand darter is state threatened species that was sampled once (i.e., single specimen, first sample in 50 years) by Travis Neebling in 2007. In 2010, 30 specimens of western sand darter were collected at 54% of our sampling reaches. The banded darter, slenderhead darter, shoal (speckled) chub, and northern logperch were the most abundant fish SGCN that occurred in a high percentage of the reaches sampled. Specifically, the banded darter was the second most abundant fish of all fish sampled. The slenderhead darter was the most commonly sampled SGCN, occurring at 93% of all reaches sampled. Preliminary results and analysis revealed that fish assemblage composition varies spatially along the Cedar River, indicating that either specific habitats or movement barriers (i.e., dams) are influencing the distributions of fishes in the river. In 2011, sampling will continue on the Iowa River, spatial analysis fish assemblage structure will extend to the Iowa River, and fish associations with instream habitat and dams will be assessed, for both rivers.

